

Application No. 10/044,503
Amendment dated November 28, 2005
Reply to Office Action of July 26, 2005

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) An image processing apparatus comprising:
 - an image input section which inputs two adjacent images, wherein the images partially overlap with each other;
 - an overlap region determining section which determines an overlap region of the images;
 - a first region determining section which determines [[a]] first and second regions region within the overlap region based on differences in pixel values between the two images determined;
 - a first pixel value determining section which determines a pixel value in the first region based on a pixel value of only one of the two adjacent images;
 - a second pixel value determining section which determines a pixel value in [[a]] the second region within the overlap region based on respective pixel values of the two adjacent images, wherein the second region is a region of the overlap region other than the first region; and
 - an image joining section which joins the two adjacent images with each other by utilizing the determined pixel values in the first region and the determined pixel values in the second region as pixel values in respective regions of the overlap region.
2. (Original) An image processing apparatus according to claim 1, wherein said first region determining section includes dividing means for dividing the overlap region into predetermined blocks, and comparing means for comparing the two images with respect to pixel values of the predetermined blocks, the first region being determined based on the result of the comparison by the comparing means.

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3. (Original) An image processing apparatus according to claim 2, wherein said comparing means includes judging means for judging whether or not the sum of absolute values of pixel value differences obtained on a predetermined block basis between the two images is equal to or greater than a threshold value.

4. (Original) An image processing apparatus according to claim 3, when said sum is judged to be equal to or greater than the threshold value by the judging means, said first region determining section determines the relevant block as the first region.

5. (Original) An image processing apparatus according to claim 3, when said sum is judged to be smaller than the threshold value by the judging means, said first region determining section determines the relevant region as the first region if the relevant region meets a predetermined condition.

6. (Original) An image processing apparatus according to claim 1, wherein said second pixel value determining section determines a pixel value by weighted mean processing related with a position.

7. (Original) An image processing apparatus according to claim 1, wherein said first pixel value determining section includes judging means for judging which one of the two adjacent images is close to the determined first region when images are joined with each other, the image which is judged to be closer being utilized as one of the images, the pixel value in the first region being determined based on the pixel value of the one image.

8. (Previously Presented) An image processing apparatus according to claim 1, wherein said first pixel value determining section includes contrast comparing means for comparing the two adjacent images with respect to a contrast of pixels in the determined first region, one of the images being determined based on the result of comparison by the contrast comparing means, the pixel value in the first region being determined based on the pixel value of the one image.

9. (Currently Amended) An image processing method comprising the steps of:

capturing a plurality of images, adjacent ones of which partially overlap with each other;

determining an overlap region where two adjacent ones of the ~~images~~ captured images overlap with each other;

determining [[a]] first and second regions within the determined overlap region based on whether a difference between corresponding pixels in the two adjacent images exceeds a threshold level;

determining [[a]] all pixel values in a region of a joined image corresponding to the first region based on a pixel value of only one of the two adjacent images;

determining [[a]] all pixel values in a region of the joined image corresponding to the second region within the overlap region based on respective pixel values of both of the two adjacent images, the second region being a region of the overlap region other than the first region; and

joining the two adjacent images with each other by utilizing the determined pixel values in the first region and the determined pixel value in the second region as pixel values in respective regions of the joined image overlap region.

10. (Currently Amended) A computer readable medium storing an image processing method comprising the steps of:

capturing a plurality of images, adjacent ones of which partially overlap with each other;

determining an overlap region where two adjacent ones of the captured images captures overlap with each other;

determining [[a]] first and second regions within the determined overlap region based on whether a difference between corresponding pixels in the two adjacent images exceeds a threshold level;

determining [[a]] all pixel values in a region of an joined image corresponding to the first region based on a pixel value of one of the two adjacent images;

determining [[a]] all pixel values in a region of the joined image corresponding to the second region within the overlap region based on respective pixel values of both of the two adjacent images, the second region being a region of the overlap region other than the first region; and

joining the two adjacent images with each other by utilizing the determined pixel values in the first region and the determined pixel value in the second region as pixel values in respective regions of the joined image overlap region.

11. (Currently Amended) A method for joining first and second overlapping images to form a composite image, the method comprising:

determining a region in which the images overlap;

comparing, within the region of overlap, predetermined blocks of pixels in the first image with corresponding predetermined blocks of pixels in the second image to determine if a pixel value of the corresponding blocks of pixels differs by a threshold amount;

identifying the predetermined blocks of pixels as belonging to a first region of pixels or a second region of pixels based on the comparison;

constructing the composite image from the pixels of the first and second images, wherein pixels from corresponding positions in the first and second images are used in portions of the composite image where the first and second images do not overlap, pixels from corresponding positions in the first image are used in portions of the composite image corresponding to the first region of pixels, and pixels calculating calculated from pixels in corresponding positions in both the first and second images are used in portions of the composite image corresponding to the second region of pixels.

12. (Previously Presented) The method of claim 11 wherein comparing predetermined blocks of pixels comprises determining whether the sum, over all the pixels in a predetermined block, of the absolute value of the difference between corresponding pixels in the first and second image exceeds a threshold value.

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13. (Previously Presented) The method of claim 12 wherein identifying the predetermined blocks comprises identifying pixels in a predetermined block as belonging to a first region of pixels if the sum exceeds the threshold value.